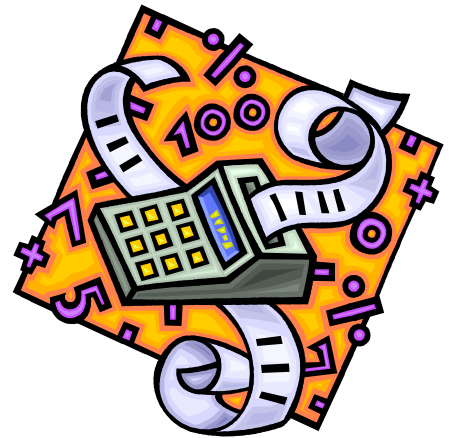


Name:



*AUSTRALIAN INTERNATIONAL SCHOOL
SINGAPORE*

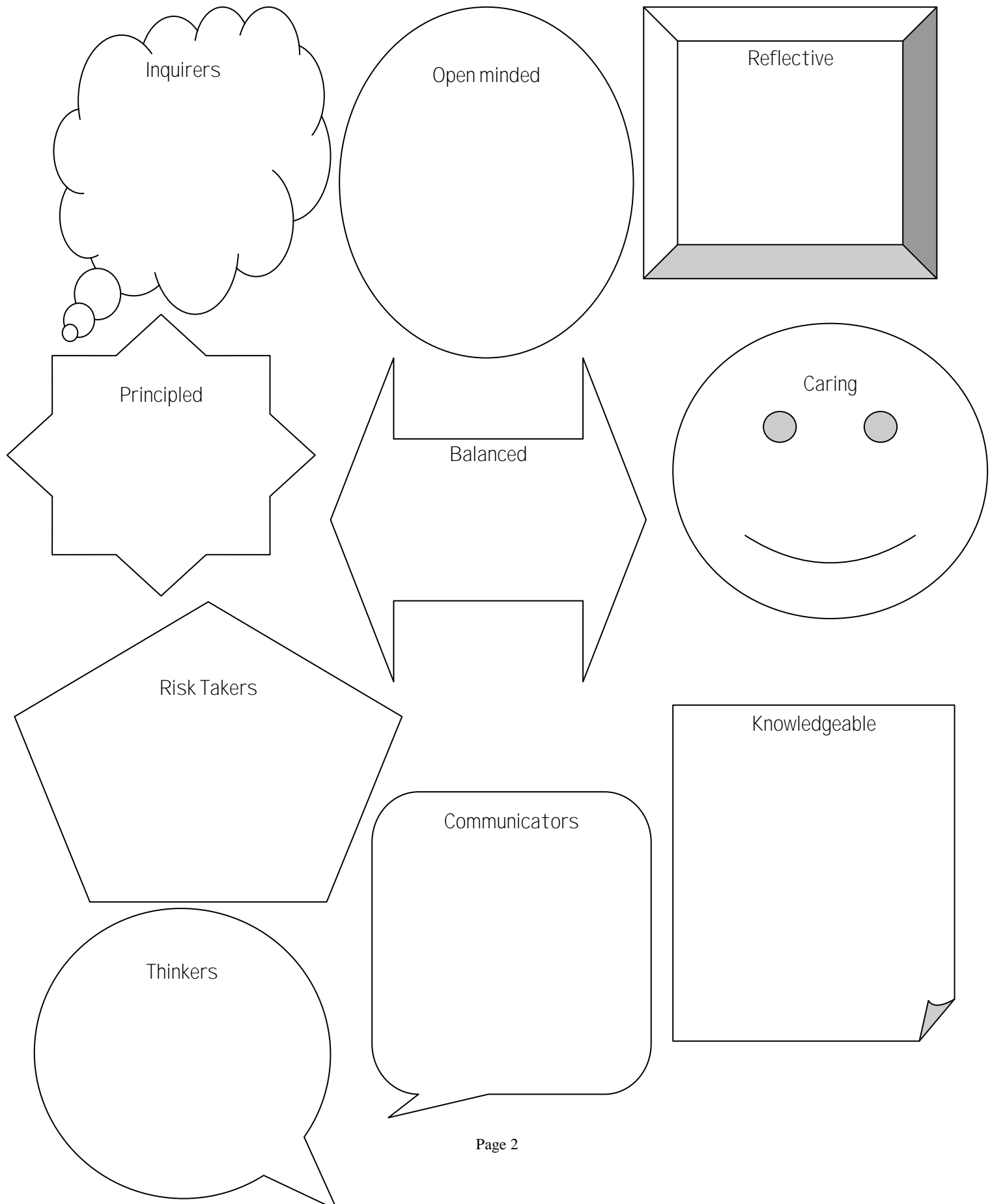
Year 7 Maths and Science Student Guide



IBO Learner Profile!

You should be good at this by now!!

The aim of all IB programmes is to develop internationally minded people who, recognizing their common humanity and shared guardianship of the planet, help to create a better and more peaceful world.



What are the five areas of interaction?

The five areas of interaction are:



approaches to learning

community and service

human ingenuity

environments

health and social education

Approaches to learning (ATL)

Through ATL teachers provide students with the tools to enable them to take responsibility for their own learning, thereby developing an awareness of how they learn best, of thought processes and of learning strategies



Community and service



This component requires students to take an active part in the communities in which they live, thereby encouraging responsible citizenship.



Human Ingenuity

Students explore in multiple ways the processes and products of human creativity, thus learning to appreciate and develop in themselves the human capacity to influence, transform, enjoy and improve the quality of life.



Environments

This area aims to develop students' awareness of their interdependence with the environment so that they understand and accept their responsibilities.

Health and social education

This area deals with physical, social and emotional health and intelligence—key aspects of development leading to complete and healthy lives.



Expected presentation of bookwork in Maths and Science

- Title page for unit showing
Unit question
Area of Interaction
Approaches to learning skills that will be utilized
- Date and learning intention for each lesson
- Notes written clearly and neatly in pen or pencil
- Tables, graphs and diagrams constructed using **pencil and ruler**
- All worksheets stuck in with glue
- Both sides of page used
- All straight lines are ruled
- Work marked in a coloured pen
- If textbook work – book title and page number recorded
- Homework is titled and dated
- Assessment tasks are kept in named document wallet to go home after each marked task.

Homework:

- The purpose of homework is to:
 - reinforce and practise skills and ideas taught in class
- Homework could be in the form of
 - Answering practice questions from the textbook (this is also saved on MOSS)
 - Activities or worksheets (can also be saved on MOSS)
 - HOTMATHS – each student will have a password and username
 - ongoing investigation work
- Homework set should take no longer than 20 minutes per night.
- Homework should be set at the end of each lesson, usually due for the next lesson (unless it's an investigation)

Equipment

Students should come to class with:

- Sharp pencils
- A coloured pen
- Ruler
- Protractor
- Compass
- Eraser
- Calculator
- Organizer
- Hotmaths passwords
- Textbook
- Exercise book
- Scissors
- gluestick
- A USB key and headphones are a good idea for ICT sessions

Year 7 Mathematics: Course Description

The Year 7 Mathematics is designed to be a broad and challenging program with a focus on learning the mathematical skills and knowledge required to investigate and solve real-life problems.

In Year 7, we aim for students to:

enjoy mathematics

use technology to reinforce and develop their understanding

be inquirers: ask questions and pose problems as well as solve them

be knowledgeable: develop understandings and skills, and apply their knowledge in context

be thinkers: make connections between the different strands of mathematics



be risk takers: make mistakes in order to find the best way forward

be communicators: explain their mathematical ideas to others using a variety of methods

be reflective: the effectiveness of their chosen strategies

MYP Assessment in Year 7 Mathematics

Mathematics MYP Criteria in a Nutshell (and how students can crack it)

|  | |  |
|---|-------------------------------|--|
| A | Knowledge and Skills | Usually done in tests. Recall all facts, get answers right. Simple to hard questions. Familiar to unfamiliar contexts. |
| B | Investigating Patterns | Usually done in investigations Show all working, do different problems on same work. Apply a learned problem solving technique to a new problem, deduce rules, and make predictions. |
| C | Communication | Sometimes in a test, but usually done in assignments. Use correct symbols, graphs or tables, and technology where appropriate, explain working and conclusions. |
| D | Reflection | Most often done in projects and investigations. Research. Have you tried every method? Is there another way? How could the results have been different? Is the result reliable? What did you do and why did you do it? |

The grade given for each criterion depends on the amount and depth of evidence that the criteria have been demonstrated.

Unit One
The Building Blocks of Maths

Unit Question: How do symbols help us understand our world?

AO1: Human Ingenuity - Understand why and how people create systems and solutions to problems, and how these change over time.

Key concepts that we will study during this unit are:

| <u>Know</u> | <u>Think I know</u> | <u>Want to find out...</u> |
|-------------|---------------------|----------------------------|
| | | |

Achievement and reflection:

| | <u>Criterion A</u> | <u>Criterion B</u> | <u>Criterion C</u> | <u>Criterion D</u> |
|----------------|--------------------|--------------------|--------------------|--------------------|
| Test | | | X | X |
| Tower of Hanoi | X | | | |

I achieved this level because:

To further improve I could:

Unit Two
Where are we in space and time?

Unit question: Where are we in space and time?

AOI: Human Ingenuity and Environments: What are some systems and solutions to problems of location?

Key concepts that we will study during this unit are:

To show what you already know about some of these ideas, please complete

- Page 6 of your text book

What are some different ways that we could describe our class community? How could we group members? What are some ways we could represent our class community?

Achievement and reflection

| | <u>Criterion A</u> | <u>Criterion B</u> | <u>Criterion C</u> | <u>Criterion D</u> |
|-------------------------------|--------------------|--------------------|--------------------|--------------------|
| Angles Booklet | | <u>X</u> | X | X |
| Directed number: Mini quizzes | | <u>X</u> | <u>X</u> | <u>X</u> |
| Trip of a lifetime | X | | | |

I achieved this level because:

To further improve I could:

Unit Three
How do you get your fair share?

Unit question: How do you get your fair share?

AO1: Communities – improve your awareness of the needs of individuals within communities

Key concepts we will be studying during this unit are:

So, how DO you get your fair share? Bullet point ideas or diagrams below.

Achievement and reflection

| | <u>Criterion A</u> | <u>Criterion B</u> | <u>Criterion C</u> | <u>Criterion D</u> |
|---------------|--------------------|--------------------|--------------------|--------------------|
| Piece of cake | | X | | |

I achieved this level because:

To further improve I could:

Unit Four

How do people represent and manipulate information?

Unit question: How do people represent and manipulate information?

AOL: Human Ingenuity - how do some products and systems impact our understanding of information?

Key concepts we will be studying during this unit are:

Graph analysis - look at the graphs your teachers gives you and decide which graphs are fair and unfair, and why.

Achievement and reflection

| | <u>Criterion A</u> | <u>Criterion B</u> | <u>Criterion C</u> | <u>Criterion D</u> |
|----------------|--------------------|--------------------|--------------------|--------------------|
| Graph analysis | X | X | | |

I achieved this level because:

To further improve I could:

Unit Five
What comes next?

Unit question: **What comes next? How can you predict what's going to happen?**

AOI: Human Ingenuity – taking action to think creatively to solve problems.

Key concepts we will be studying during this unit are:

Your teacher will ask you to complete some questions to show what you already know about algebra.

Achievement and reflection

| | <u>Criterion A</u> | <u>Criterion B</u> | <u>Criterion C</u> | <u>Criterion D</u> |
|--------------------------|--------------------|--------------------|--------------------|--------------------|
| Pascal's Triangle | X | | | |
| Bearconomics | X | | | |
| Unit Test | | <u>X</u> | <u>X</u> | <u>X</u> |

I achieved this level because:

To further improve I could:

Unit Six
How do numbers save your life?

Unit question: How do numbers save your life?

AOI: Human Ingenuity – taking action to identify and solve safety problems?

Key concepts we will be studying during this unit are:

How do numbers save your life???? Draw some diagrams to show your ideas.

Achievement and reflection

| | <u>Criterion A</u> | <u>Criterion B</u> | <u>Criterion C</u> | <u>Criterion D</u> |
|---------------|--------------------|--------------------|--------------------|--------------------|
| F1 Forces | X | | | |
| Barbie Bungee | | X | | |

I achieved this level because:

To further improve I could:

Unit Seven
What's in a shape?

Unit question: What's in a shape?

AOI: Your choice

Key concepts we will be studying during this unit are:

Why use this shape? Your teacher will hand this to you, stick it in!

Achievement and reflection

| | <u>Criterion A</u> | <u>Criterion B</u> | <u>Criterion C</u> | <u>Criterion D</u> |
|--------------------------------|--------------------|--------------------|--------------------|--------------------|
| Test | | X | | X |
| Yummy yum boxes/Zoo plan | X | | | |

I achieved this level because:

To further improve I could:

Year 7 Science: Course Description

Year 7 Science offers students the opportunity to develop their scientific knowledge, skills and attitudes with a key focus on the scientific method. Students learn to apply knowledge and skills to everyday situations to solve problems. You will learn to analyse information, make and validate appropriate conclusions and decisions. Activities include field work; whereby you will take the role of a scientist to collect and manipulate data, practical experimentation, microscopy, and dissection.

You will also develop an appreciation of the links between Science and everyday life as well as the dynamic interactions between Science and societal and environmental issues.

Science Assessment and MYP Criteria

You are given a variety of opportunities to show what they have learnt in the following six criteria.

| ASSESSMENT CRITERIA FOR MYP SCIENCES | | |
|---|--|---|
| CRITERION | WHAT DOES IT MEAN? | EXAMPLE ACTIVITIES |
| A. One World | <ul style="list-style-type: none">➤ <i>How does Science affect the world we live in?</i>➤ <i>How can we use Science to help solve societal and environmental issues?</i>➤ <i>What are the moral and ethical implications of Science?</i> | <ul style="list-style-type: none">• Essays• Presentations• Reading news reports• Research• Discussions/debates• Interviews |
| B. Communication in Science | <ul style="list-style-type: none">➤ <i>Can I make other people understand what I mean when I talk/write about Science?</i>➤ <i>Can I present my knowledge of Science in different media?</i> | <ul style="list-style-type: none">• Essays• Presentations• Reports• Demonstrations• Creative ideas• Posters• Animations or movies |
| C. Knowledge and Understanding in Science | <ul style="list-style-type: none">➤ <i>Can I understand essential concepts?</i>➤ <i>Can I show evidence of my learning in Science?</i>➤ <i>Can I apply my knowledge to solve problems?</i> | <ul style="list-style-type: none">• Tests• Clear notes• Mind maps• Concept maps• Discussions• Interviews |
| D. Scientific Enquiry | <ul style="list-style-type: none">➤ <i>Can I make reasonable hypotheses, based on clear aims?</i>➤ <i>Do I understand and can I control variables?</i>➤ <i>Can I plan an effective, fair experiment?</i> | <ul style="list-style-type: none">• Generating problems and designing experiments or methods to test ideas and theories |
| E. Processing Data | <ul style="list-style-type: none">➤ <i>Can I display my results clearly?</i>➤ <i>Can I process numerical data appropriately?</i>➤ <i>Can I draw conclusions consistent with the results?</i>➤ <i>Do I evaluate my method to look for improvement?</i> | <ul style="list-style-type: none">• Collecting and using results• Producing graphs• Interpreting data from any source |
| F. Attitudes in Science | <ul style="list-style-type: none">➤ <i>Do I work safely and efficiently?</i>➤ <i>Do I work ethically and considerately?</i>➤ <i>Can I work independently and as part of a team?</i> | <ul style="list-style-type: none">• Every aspect of Science:• Practicals• Group work• Field work• Assignments |

Unit One

How can you prove something is true?

Unit question: How can you prove that something is true?

AO1: Human Ingenuity - an awareness of processes involved in change and innovation.

Key concepts studied in this unit

Scientific skills we will use

Achievement and evaluation

| | A | B | C | D | E | F |
|---------------------------------|---|---|---|---|---|---|
| Unit test | X | X | | X | X | X |
| Data processing 'Hookworms!' | X | X | X | X | | X |
| Tea with milk | X | X | X | | | X |
| Driver's licence | X | X | X | X | X | |

Things I did really well:

Why did I achieve these levels?

Things to practise or improve:

Unit Two

Matter and Mixtures

Unit question : How can changes shape the world?

AO1: Human Ingenuity - an awareness of processes involved in change and innovation.

Key concepts studied in this unit

Scientific skills we will use

Achievement and evaluation

| | A | B | C | D | E | F |
|-----------------|---|---|---|---|---|---|
| Unit test | X | X | | X | X | X |
| Unit test | X | X | | X | X | X |
| What a mess! | X | X | X | X | X | |
| Solubility task | | | | X | X | |

Things I did really well:

Why did I achieve these levels?

Things to practise or improve:

MYP Interdisciplinary project- Animal Behaviour Study

Areas Assessed: Mathematics and Science

Science: Criterion D: Scientific Inquiry and Criterion E: Processing and collecting data

Maths: Criterion A: Knowledge

Science: study and describe animal behaviours, collect and analyse data, describe the importance of science to society

Mathematics: use fractions, decimals and percentages to manipulate data to draw computer generated tables and graphs.

Do animals within the same species behave differently?

Achievement and evaluation

| | A | B | C | D | E | F |
|----------------------------|---|---|---|---|---|---|
| EPI Zoo | | X | X | | | |
| Zoos and science essay | | | X | X | X | X |
| Mathematical Communication | X | X | | X | X | X |

Things I did really well:

Why did I achieve these levels?

Things to practise or improve:

Unit Three

Sort it out!

Unit question : Why do we belong and how do we sort?

AOI: **Communities**,..... why do you think this is the AOI?

Key concepts studied in this unit

Scientific skills we will use

Achievement and evaluation

| | A | B | C | D | E | F |
|--------------|---|---|---|---|---|---|
| Unit test | X | X | | X | X | X |
| Unit test | X | X | | X | X | X |
| Slide making | X | X | X | X | X | |

Things I did really well:

Why did I achieve these levels?

Things to practise or improve:

Unit Four

May the Force be with you!

Unit question: Where's the balance in your life?

AO1: Human Ingenuity: Taking action to: create solutions, and products to solve own and **others' problems**

Key concepts studied in this unit

Scientific skills we will use

Achievement and evaluation

| | A | B | C | D | E | F |
|-------------------------|---|---|---|---|---|---|
| 60 second science video | X | | X | | | |
| Race track design | X | X | X | | | |

Things I did really well:

Why did I achieve these levels?

Things to practise or improve:

Unit Five

Can you trust your senses?

Unit question: Can you trust your senses?

AO1: Health and social education: which health issues will affect me now, and as I get older?,
Reflection on looking after ourselves, making choices about how can we look after ourselves and others?

Key concepts studied in this unit

Scientific skills we will use

Achievement and evaluation

| | A | B | C | D | E | F |
|-----------------------|---|---|---|---|---|---|
| Assistive tech poster | | | X | X | X | X |
| Unit test | X | X | | X | X | X |

Things I did really well:

Why did I achieve these levels?

Things to practise or improve:

Scientific Practical Skill Development. Tick it when you've done it!

| Skills | Components | Year Level | | | | |
|-------------------|-------------------------------|------------|---|---|---|----|
| | | 6 | 7 | 8 | 9 | 10 |
| Basics | Drawing apparatus | X | | | | |
| | Labeling apparatus | X | | | | |
| | Safety/Equipment use/Disposal | X | | | | |
| | Boiling liquids safely | X | | | | |
| Microscopy | Labeling a microscope | X | | | | |
| | Calculating magnification | X | | | | |
| | Binocular microscope | X | | | | |
| | Monocular microscope | | X | | | |
| | Focusing in LP | X | | | | |
| | Focusing in HP | | X | | | |
| | Drawing from slides | X | | | | |
| Separations | Filtration | X | | | | |
| | Evaporation | X | | | | |
| | Decanting | X | | | | |
| | Distillation | X | | | | |
| | Fractional distillation | | | X | | |
| | Chromatography | X | | | | |
| | Centrifugation | X | | | | |
| Gas Collection | Up | X | | | | |
| | Over water | X | | | | |
| Testing for gases | Oxygen | X | | | | |
| | Carbon dioxide | X | | | | |
| | Hydrogen | X | | | | |
| Meters | Thermometers, stop watches | X | | | | |
| | Electronic Balance, volume | | X | | | |
| | Hand Held pH probes | | X | | | |
| | Ammeter, Voltmeters | | X | | | |
| | Ticker timers | | | | | X |
| | Force meters | | X | | | |
| Dissections | Scalpels, probes | | X | | | |
| Basic Circuitry | Wiring | | | X | | |
| | Series and parallel | | | X | | |

